A NEW OPERATION FOR SPASMODIC WRY NECK. NAMELY, DIVISION OR EXSECTION OF THE NERVES SUPPLYING THE POSTERIOR ROTATOR MUSCLES OF THE HEAD.[1]

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ABOUT three years ago, in studying carefully a case of spasmodic torticollis with Dr. Mitchell, he asked me, in view of the implication of the posterior muscles of the neck which rotated the head, as well as of the Sterno-Cleido, whether it would not be possible to do an operation for dividing or excising their nerves, similar to neurotomy or neurectomy of the spinal accessory nerve. I made a number of careful dissections to determine the feasability of the operation, and as a result of it, I formulated the steps of an operation which I have repeatedly done to the cadaver, but only once have I had the opportunity of doing it on the living. That case, Dr. Dercum who kindly referred her to me at the Woman's hospital for operation, will report fully to the Society this evening.[2] I may add, that the only difficulty of the operation was the depth of the wound, which made it troublesome to get a good light, and, therefore, the mechanical steps of the operation were sometimes a little difficult. An electric light (which I did not then have) would have facilitated its steps very much.

The hemorrhage was quite free, but easily controllable; the drainage was perfect, and the recovery of the patient from the operation a speedy one. Dr. Dercum will report upon the results, so far as the disease is concerned.

[1] Read before the Philadelphia Neurological Society, October 27, 1890. For the discussion and report of the case alluded to, see the Journal of Nervous and Mental Diseases, December, 1889.

[2] Loc. cit.

THE ANATOMY OF THE PARTS INVOLVED IN THE OPERATION.

I. *Muscles.*—The chief posterior cervical muscles that rotate the head are the splenius capitis, the rectus capitis posticus major and the obliquus inferior, of which the last, though not the largest muscle, has the most favorable leverage. The splenius is supplied by the external branches of the posterior divisions of the second and third cervical nerves. The rectus capitis by the sub-occipital from the first cervical, and the obliquus inferior by the sub-occipital and a branch from the second cervical, before its division into its external and internal branches.

An important anatomical point in recognizing the muscles and the nerves is the sub-occipital triangle, formed by the rectus capitis posticus major and the obliquus superior and inferior. The two oblique muscles which form the superior and inferior border of the triangle run from the tip of the transverse process of the atlas to the spinous process of the axis, and to the occipital bone, respectively.

The rectus capitis posticus major, which forms the third or inner border of the sub-occipital triangle, arises from the spine of the axis, and is inserted into the inferior curved line of the occipital bone and the space between it and the foramen magnum.

From this triangle emerges the sub-occipital nerve, and in it the vertebral artery is seen, and, of course, is most carefully to be avoided. This, and the occipital artery just below the triangle are the only arteries of importance which are to be considered in the operation.

II. *Nerves.*—The nerves to be resected are the posterior divisions of the first three cervical nerves. The posterior division of the *first* cervical sub-occipital nerve supplies the rectus and the two oblique muscles. After escaping from the spinal canal, between the occipital bone and the posterior arch of the atlas, it enters the sub-occipital triangle. Its location in this triangle makes it easy of recognition.

The posterior division of the *second* cervical just before its bifurcation gives off a small filament to the inferior oblique. It then bifurcates into two branches, the internal and external. The small external branch supplies the splenius.

The larger internal branch (the occipitalis major) pierces the complexus about a half inch from the middle line of the back, and then enters the trapezius muscle.

This nerve, the occipitalis major, will be involved by the section of the posterior division of the second cervical before bifurcation, but, inasmuch as this is mostly a cutaneous nerve and supplies only the complexus muscle, the paralysis of which would be a matter of no importance, the whole posterior division of the second cervical may be divided close to its emergence from the spine, and prior to its bifurcation into its external and internal branches. An additional reason is, that the occipitalis major from its size is readily found, and serves as a guide, whereas the two branches of the second cervical to the inferior oblique and the splenius (the first arising before, and the second after the bifurcation of the posterior division into the internal and external branches) are difficult to find.

The posterior division of the *third* cervical is much smaller than either of the others, but it is easily found under the complexus about an inch below the occipitalis major. Just after its emergence from the spine, it divides into the internal branch which is cutaneous, and the external, which supplies the splenius and other muscles. It is best to divide the main trunk, as it is more easily found than its branches.

Operation.

First step.—The field of operation having been shaved and disinfected, make a transverse incision about a half an inch below the level of the lobule of the ear, from the middle line of the neck posteriorly, or even slightly overlapping the middle. This incision should be $2\frac{1}{2}$ to 3 inches long.

Second step.—Divide the trapezius transversely.

Third step.—Dissect up to the trapezius and find the occipitalis major nerve as it emerges from the complexus and enters the trapezius. In the complexus is an intra-muscular aponeurosis. The nerve emerges from the complexus at a point between this aponeurosis and the middle line, usually about a half inch below the incision, but sometimes higher up, and then

enters the trapezius. It is always a large nerve of the size of a stout piece of catgut, and it is easily found if sought for at the right place.

Fourth step.—Divide the complexus transversely at the level of the nerve. This division should be made by repeated small cuts, so as not to cut the nerve which is our guide, after which dissect the nerve still further down from the anterior surface of the complexus, where it arises from the posterior division of the second cervical. Cut, or better, exsect a portion of the posterior division before the occipitalis major arises from it, so as to catch the filament to the inferior oblique muscle. This divides the *second cervical.*

Fifth step.—Recognize the inferior oblique muscle by following the sub-occipital nerve towards the spine. The nerve passes immediately below the border of the muscle.

Sixth step.—Recognize the sub-occipital triangle formed by the two oblique muscles and the rectus capitis posticus major. In this triangle lies the sub-occipital close to the occiput. It should be traced down to the spine itself, and be divided, or better, exsected. This divides the *first cervical.*

Seventh step.—An inch lower down than the occipitalis major, and under the complexus, is the external branch of the posterior division of the third cervical to the splenius. When found, it is to be divided or exsected close to the bifurcation of the main trunk. This divides the *third cervical.*

A drainage tube and horse hairs are to be inserted, and as the patient lies on the back, although the wound is very deep, the condition is most favorable for good drainage. If desired, the posterior muscles can be united by buried sutures, independently of those in the skin. The after treatment is the same as for ordinary operations.